Appl. No. 10/710,823
Amdt. Dated July 17, 2006
Reply to Office action of April 17, 2006

Remarks:

Information Disclosure Statement

The Office Action indicates that the information disclosure statement submitted April 1, 2005 is deficient because a legible copy of a foreign patent document was not included. Applicant believes that it submitted a copy of foreign patent reference GB 2,363,215 with the Information Disclosure Statement filed on 04/01/2005. Such reference is shown as being received in PAIR. An additional copy of GB 2,363,215 is provided for the Examiner's consideration. Applicants respectfully request that the reference be deemed to have been timely submitted and considered by the Examiner.

Specification

The Specification is objected to due to certain formalities. Applicants believe that the amendments to the specification submitted herewith adequately addresses the objection. Withdrawal of the objection is respectfully requested.

Claims

Claims 1-29 are pending in the application. Claim 14 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Applicants traverse this rejection. Applicants direct the Examiner's attention to paragraph 51 of the specification as one place where support for the subject matter of claim 14 may be found. In paragraph 51, the specification explains that "...well trajectory data may or may not be included in the BHA source data file." The specification explains further that the well trajectory data may be from well plan data or survey data. Thus, the specification provides, for one skilled in the art, the alternative source of the "information related to a well trajectory or time-versus-depth data" on which the "animating" in claim 12 is based. This enables one skilled in the art to practice inventive method of claim 14.

Applicants respectfully request withdrawal of the rejection of claim 14 under 35 U.S.C. §112, first paragraph.

11

Appl. No. 10/710,823
Amdt. Dated July 17, 2006
Reply to Office action of April 17, 2006

Claims 12-13, and 15 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Each of these claims has been amended to address the rejections. Applicant respectfully requests withdrawal of the rejections.

Claims 1, 3-7, 11, and 28 are rejected under 35 U.S.C. §102(e) as being anticipated by Huang, et al. (U.S. Patent No. 6,873,947). Claim 2 is rejected under 35 U.S.C. §103(a), as being unpatentable over the same Huang '947 reference. Further, claims 8-10 and 16-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Huang '947 reference in view of the Landmark reference. Applicant respectfully traverses each of the above §102(e) and §103(a) rejections.

Claim 1 of the present application is directed to a method for displaying a bottom hole assembly (BHA) using vector graphics. Huang '947 is directed, on the other hand, to a method for simulating or modeling a roller cone bit. Thus, the subject matter of Huang '947 differs from the claimed subject matter of the invention. First, Huang '947 is directed to a roller cone bit rather than a bottom hole assembly. The two are different. Although a drill bit may be one component of the BHA, what applies to one does not necessarily apply to the other. In the context of a displaying technique, the bottom hole assembly is different because it involves multiple components which are dynamic and which interact with one another along the length of the drill string and borehole. The teachings of Huang '947 address concerns relevant to rock cone bits. The present invention is advantageously suited for application to BHA.

Secondly, the Huang '947 reference is directed to improvements to the simulation of the roller cone bit, including the forces acting on the bit. The present invention provides, on the other hand, improvements to the display of the bottom hole assembly. More specifically, the present invention is directed to displaying the bottom hole assembly using vector graphics. In contrast, Huang '947 is not directed to displaying a roller cone bit using vector graphics or the employment of vector graphics to display any component.

Specifically, the present method requires the step of "parsing and interpreting BHA source data to produce data packets corresponding to BHA components." As mentioned above, Huang '947 does not relate to a BHA or BHA components and does not produce data packets representing components of a BHA or roller cone bit. Huang '947 does describe a method of generating a visual representation of a roller cone bit drilling earth formations. As pointed out in

12

Appl. No. 10/710,823
Amdt. Dated July 17, 2006
Reply to Office action of April 17, 2006

the Office Action, the method of Huang '947 requires use of input data for the simulation,

including drilling parameters and bit design parameters. This data is stored in an input library

and later retrieved as needed during simulation calculations, but no parsing and interpreting of

the data is revealed. Without more, this series of steps falls short of "parsing and interpreting

BHA source data" and further, so as to "produce data packets corresponding to BHA

components." Accordingly, the Huang '947 reference does not teach or suggest the claimed

invention.

The method of claim 1 also requires the step of "assembling the BHA using vector

graphics components in a vector graphics library, wherein the vector components represent the

BHA components." The Office Action points to the second paragraph in column 8 of the Huang

'947 reference for correspondence to this step of the claimed method. In this paragraph, the cited

reference does discuss output data that is converted to visual representations. The figures are

described as including line renditions representing three-dimensional objects preferably

generated using means such as the three-dimensional graphics language OPEN GL (which

applicants understand not to display in vector graphics or store vector graphics components).

The cited reference also explains that bit design parameters may be provided as input and

converted into visual representation parameters for visual display. Alternatively, the visual

representations may be visually represented from input data or based on simulation calculations,

and may be in the form of three-dimensional CAD solid or surface models.

Nothing in the above excerpt from Huang '947 teaches assembling a rock cone bit or

BHA using vector graphics components that are stored in a vector graphics library. Even if the

reference to "bit design parameters provided as input and converted into visual representation

parameters" did equate to "assembling the BHA using vector graphics components stored in a

vector graphics library", there is no teaching of the "input data" or "visual representation

parameters" representing "BHA components" or rock cone bit components.

In fact, the reference to visual representations and graphic displays discussed in the

Huang '947 reference appears to be consistent with the prior art discussed in the present

application and, for which, Applicant's invention present improvements. Neither Huang '947,

nor the other cited references, or the prior art discussed in the application, teaches or suggests the

steps of parsing and interpreting BHA source data to produce data packets corresponding to BHA

13

components and/or assembling the BHA using vector graphics components in a vector graphics library, wherein the vector graphics components represent BHA components.

Claim 1 further requires a step of displaying the BHA at a selected scale. Applicant notes that Huang '947 does not discuss the capability of displaying the BHA or rock cone bit at a selected scale. To facilitate the examination of the present application, Applicant has amended claim 1 to clearly set out and highlight the step of selecting a scale for display. This is yet another feature of the invention representing an improvement over the Huang '947 teaching and the other cited prior art.

Attention is also directed to dependent claims 16-24 which further recites:

> wherein the parsing and the interpreting the BHA source data further[1]
> produce data packets corresponding to a drill string that is attached to the BHA,
> wherein the assembling further comprises assembling the drill string using vector
> graphics components that represent drill string components, and wherein the
> displaying further displays the drill string.

In these dependent claims, Applicants' invention further contemplates extending the steps of claim 1 to the drill string and the components of the drill string. In this way, the method achieves benefits similar to those afforded to the display of the BHA and its components. As made clear above, the teachings of Huang '947 is not extendable to a multi-component object such as a bottom hole assembly. Clearly, it is also not extendable to a multi-component drill string.

The Landmark reference does not cure any of the deficiencies of the Huang '947 reference. This reference appears to be directed to visualization of well bore information and equipment. It specifically describes the capability of viewing the components or segments of a downhole equipment program – by clicking a mouse. It does not, however, fill in any of the elements or steps missing from Huang '946, as discussed above.

Thus, none of the cited references individually or in any combination teaches or suggest each and every element of amended claim 1. Accordingly, independent claim 1 and claims 2-28, each of which depends from claim 1, are patentable over the cited references.

Independent claim 29 is directed to a system for displaying a bottom hole assembly (BHA) using vector graphics. The systems includes, among other elements, a process and memory, wherein the memory stores a program having instructions for each of the steps

14

Appl. No. 10/710,823
Amdt. Dated July 17, 2006
Reply to Office action of April 17, 2006

previously discussed in respect to claim 1. Thus, none of the cited references teaches the combination of a processor and memory storing a program having these instructions. Accordingly, claim 29 is also patentable over the cited references.
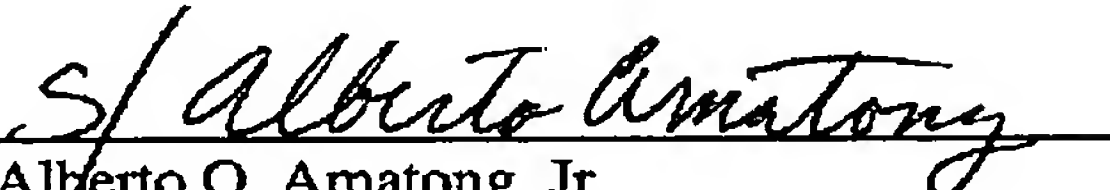
In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance.

No fee is believed to be due at this time. If the appropriate Petition for an Extension of Time is not attached hereto (or any other Petition required of the application), this statement shall serve as Applicants' Petition to the U.S.P.T.O. The Commissioner is hereby authorized to charge any additional fees or credit any overpayments related to this response to Deposit Account No. **50-0997 (19.0355US)**, maintained by Paula D. Morris & Associates, P.C. d/b/a Morris & Amatong, P.C..

The undersigned is available for consultation at any time, if the Examiner believes such consultation may expedite the resolution of any issues.

Respectfully submitted,

Date: _7-17-06_

S/ Alberto Amatong

Alberto Q. Amatong, Jr.
Registration No. 41,580
Morris & Amatong, P.C.
10260 Westheimer, Suite 360
Houston, Texas 77042-3110
Telephone: (713) 334-5151
Facsimile: (713) 334-5157
ATTORNEY FOR APPLICANTS

15